Serial No. 09/942,323

IN THE SPECIFICATION:

Please replace paragraph number [0001] with the following replacement paragraph:

[0001] This application is a continuation of application Serial No. 09/405,943, filed September 27, 1999, ~~pending~~now U.S. Patent 6,346,152, issued February 12, 2002, which is a continuation of application Serial No. 08/906,673, filed August 5, 1997, now U.S. Patent 6,013,535, issued January 11, 2000.

E1

Please replace paragraph number [0005] with the following replacement paragraph:

[0005] Although the teaching of the '679 patent is an effective method for attaching leads in a LOC configuration, it is difficult to achieve an adequate profile ~~on~~in the adhesive such that there is sufficient area on the top of the adhesive to attach the lead fingers. The process disclosed in the '679 patent is illustrated in FIGs. 14-20. FIG. 14 illustrates a side, cross-sectional view of a semiconductor substrate 302 with a bond pad 304, wherein a stencil or a screen print template 306 has been placed over the semiconductor substrate 302, generally a silicon wafer. The stencil or screen print template 306 is patterned to clear the area around the bond pads 304 and to clear street areas 308 for saw cutting (i.e., for singulating the substrate into individual dice). An adhesive material 310 is applied to the stencil or screen print template 306, as shown in FIG. 15. Ideally, when the stencil or screen print template 306 is removed, adhesive prints 312 are formed with vertical sidewalls 314 and a planar upper surface 316, as shown in FIG. 16. However, since the adhesive material 310 must have sufficiently low viscosity to flow and fill the stencil or screen print template 306, as well as allow for the removal of the stencil or screen print template 306 without the adhesive material 310 sticking thereto, the adhesive material 310 of the adhesive prints 312 will spread, sag, or flow laterally under the force of gravity after the removal of the stencil or screen print template 306, as shown in FIG. 17. This post-application flow of adhesive material 310 can potentially cover all or a portion of the bond pads 304 or interfere with the singulating of the semiconductor wafer by flowing into the street areas 308.

E2

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Please replace paragraph number [0006] with the following replacement paragraph:

[0006] Furthermore, and of even greater potential consequence than bond pad or street interference is the effect that the lateral flow or spread of adhesive material 310 has on the adhesive material upper surface 316. As shown in FIG. 18, the adhesive material upper surface 316 is the contact area for lead fingers 318 of a lead frame 320. The gravity-induced flow of the adhesive material 310 causes the once relatively well-defined edges 322 of the adhesive material to curve, resulting in a loss of surface area 324 (ideal shape shown in shadow) for the lead fingers 318 to attach. This loss of surface area 324 is particularly ~~problematical~~problematic for the adhesive material upper surface 316 at the longitudinal ends 326 thereof. At the adhesive material longitudinal ends 326, the adhesive material flows in three directions (to both sides as well as longitudinally), causing a severe curvature 328, as shown in FIGs. 19 and 20. The longitudinal ends of the adhesive print on patch flow ~~in~~is a 180° flow front, resulting in blurring of the print boundaries into a curved perimeter. This curvature 328 results in complete or near complete loss of effective surface area on the adhesive material upper surface 316 for adhering the outermost lead finger closest to the adhesive material longitudinal end 326 (under lead finger 330). This results in what is known as a "dangling lead." Since the lead finger 330 is not adequately attached to the adhesive material longitudinal end 326, the lead finger 330 will move or bounce when a wire bonding apparatus (not shown) attempts to attach a bond wire (not shown) between the lead finger 330 (shown from the side in FIG. 20) and its respective bond pad 304 ~~(shown from the side in FIG. 20)~~. This movement can cause inadequate bonding or non-bonding between the bond wire and the lead finger 330, resulting in the failure of the component due to a defective electrical connection.

E3

Please replace paragraph number [0018] with the following replacement paragraph:

[0018] FIG. 4 is a schematic representation of an ~~alternate~~alternative process of the present invention;

E4

Please replace paragraph number [0036] with the following replacement paragraph:

[0036] As shown in ~~FIG. 6~~FIGs. 6 and 7, the lead fingers 104 are lowered onto or proximate the exposed surface 122 of the adhesive material 114. When a bottom surface 124 of the lead fingers 104 comes in contact with the exposed surface 122 of the adhesive material 114, the adhesive material 114 wets out across the bottom surface 124 of the lead finger 104. As shown in FIG. 7, when the lead fingers 104 are retracted from the adhesive material 114, the cohesion of the adhesive material 114 with the lead fingers 104 pulls some of the adhesive material 114 from the bulk of the adhesive material 114 to form an adhesive film 126 on the bottom surface 124 of the lead finger 104. The thickness of the adhesive film 126 can range from 0.1 to 15 mils, depending on the viscosity of the adhesive material 114. Changing the shape of the lead finger 104, changing the rheology of the adhesive material 114, pre-coating the lead finger 104 with a surfactant, such as NMP, or placing a solvent in the adhesive material 114 to improve wetting and/or adding adhesion promoters, such as silane, siloxane, or polyimide siloxane, to the adhesive material 114 will also change the thickness and/or pattern of the adhesive film 126. It is, of course, understood that the adhesive material 114 must be capable of adhering to the lead fingers 104 and must not be of such a low viscosity that it drips when the lead fingers 104 are removed from contact with the exposed surface 122 of the adhesive material 114.

K5

Please replace paragraph number [0048] with the following replacement paragraph:

[0048] Moreover, the reservoir may be any structure which exposes a viscous material pool and may be one of a variety of designs, as shown in FIGs. 25-26. FIG. 25 illustrates a ~~plate-type~~plate-type reservoir 150 in which a very thin layer of viscous material 152 is delivered across plate 154 from an inlet 156 to an opposing outlet 158. FIG. 26 illustrates a reservoir 160 with a ~~curved-edge~~curved-edge spillway 162. The viscous material 164 is pumped into a chamber 166 and over the spillway 162 at a constant rate. This results in a self-limiting viscous material height 168. The lead fingers of a lead frame are contacted with the viscous material 164 over the

K6

E6 end

spillway 162 where the viscous material 164 would inherently, due to its viscosity, form a raised area 170 over the spillway 162 into a spill chamber 172.